species. The validity of this interesting observation by Lovén will have to be tested on other grounds; for it is a matter of considerable doubt in our minds whether all the species which have been admitted into the genus *Discoidea* can remain in it.

D. subuculus differs much from *D. cylindrica* in the hollowed-out and tumid nature of the actinal part of the test, in the existence of low primary ambulacral plates only, and their great crowding without the formation of compound plates. Again, the madreporite is in the second basal only. Nevertheless, we have found ribs on the inner surface of the actinal part of the test, as in *D. cylindrica*; and probably the perignathic girdle will be found. As yet, we have only detected very indefinite traces of it.

On the Characters of the Genus *Lophopus*, with Description of a new Species from Australia. By Stuart O. Ridley, M.A., F.L.S.

[Read 4th November, 1886.]

(Plate II.)

Probably in few groups of the Animal Kingdom have such unnatural characters been employed for the distinction of genera and species as in the Phylactolæmatous Polyzoa. Few systematic zoologists can, for example, have studied the relations of *Alcyonella* and *Plumatella* without feeling that the current reasons for separating these two divisions are far from satisfactory, consisting, as expressed by Prof. Allman in his well-known 'Monograph of the Freshwater Polyzoa' (Ray Society, 1856), chiefly in the manner of connection between the tubes composing the colony. "Except in the condition of the dermal system, the structure of *Plumatella* differs in no essential point from that of *Alcyonella*. This system, however, in the coalescence of the tubes into a common mass in *Alcyonella*, while they remain totally distinct in *Plumatella*, presents us with a difference which I believe to be of sufficient importance to justify us in placing the two forms in separate generic groups" (*l. c.* p. 92).

Dr. Jullien ("Monographie des Bryozoaires d'eau douce," Bull. Soc. Zool. France, x. p. 90, published in 1885) has given very forcible expression to this feeling of dissatisfaction, and has indeed introduced into the classification modifications of a very

fundamental character, of which his union of the genus *Alcyonella* with *Plumatella*, and even the species of the former with species of the latter genus in a long list of synonyms, is not the most radical of the changes.

It is, however, my object on this occasion to draw attention to but one part of the existing systems which seems to require remodelling.

The diagnosis of *Lophopus*, as given by Allman (*l. c.* p. 83), runs :—" Cœnœcium sacciform, hyaline, with a disc which serves for attachment but not for locomotion; ectocyst gelatinoid; orifices scattered. Statoblasts elliptical, with an annulus, but without marginal spines."

Jullien (*l. c.* p. 139), besides characters derived from the general relations of the colony as a whole, inserts in his definition of the genus :—" *Statoblastes* elliptiques pourvus d'un anneau sur le pourtour; anneau terminé en pointe aux extrémités du grand diamètre."

The discovery, as detailed below, of a new species of the genus in Australia, involves the giving up of the last-named character as of generic importance, and *Lophopus* remains distinguished from *Cristatella* by the absence of spines from the statoblast and of a locomotor disk from the colony, and from *Pectinatella* chiefly by the former character.

Lophopus Lendenfeldi, n. sp.

Zoarium forming chain-like or contort linear growths, the zoœcia being aggregated into small linear groups, which are connected with each other by stolon-like lobes. Zooids deeply divided from each other within the ectocyst, tubular, ending below in rounded, slightly constricted knobs terminated by a special thickening of the outermost layer of the endocyst. Ectocyst perfectly hyaline, about 1 millim. deep, forming low mammillæ, about ·02 millim. high, which contain the zoœcial orifices.

Tentacles about 50 in number, the longest longer than the endocyst-body. Epistome not observed. Ectocyst (in spirit) hyaline, colourless; endocyst-bodies pale yellow. Statoblast strictly elliptical in outline, annulus almost flat; body very convex.

Measurements.—Length of extended polypide (the portion within ectocyst-sheath) about 1 millim. Diameter of neck of zoœcium (endocyst) about ·02 millim. Length of lophophore, from

root of arm to tip of furthest tentacle, about 1 millim. Maximum length of tentacles (in spirit specimens) about 1 millim.

Statoblast about ·85–·95 millim. long by ·7 millim. broad; annulus about ·22 wide at ends, about ·15 millim. at sides; cells of annulus about ·01 to ·05 millim. broad.

Habitat. Paramatta River, New South Wales.

The chief points distinguishing this species from *L. crystallinus* appear to be the absence of terminal angles to the statoblast, and the knobbed form of the inner end of the endocyst. The tentacles are also probably far longer than in *L. crystallinus*. No other species of the genus is known—that form assigned to it by Mr. Carter, from Bombay, evidently being rightly removed from *Lophopus* by Hyatt and Jullien. I have bestowed upon the species under notice the name of its indefatigable discoverer, Dr. von Lendenfeld, not only on account of his discovery, and of the very remarkable manner in which he has preserved the specimen, which shows almost all its characters as in life, but also in commemoration of his generosity in presenting it to the Natural History Museum, and in allowing me to describe a new form, systematically and geographically of such high interest.

The particular specimen from which this description is drawn up coats some thin fasciated vegetable stems for a length of $3\frac{1}{4}$ inches, but probably was much more extensive originally; the mass thus formed is about 7 millim. in greatest diameter. The statoblasts are described from a specimen found in a dead colony, obtained at the same spot, which exhibits the characters of the ectocyst sufficiently for identification. The conditions under which the colonies are growing (practically covering the entire circumference of the object in which they rest) almost preclude the possibility of such approaches to locomotion as have been sometimes attributed to *L. crystallinus*; at the same time their attachment to the base is very slight. The body of the statoblast is dark umber-brown, the annulus colourless.

Minute Structure.—Staining with borax carmine has enabled me, in the excellent state of preservation of the specimen, to demonstrate clearly that the outermost layer of the ectocyst consists of substellate nucleated cells; these are most usually roughly oblong in shape, with the branches chiefly at the poles, and measure about ·015–·02 by ·005 millim., with a small nucleus and punctiform nucleolus; but interspersed abundantly among them are some cells with a globular central mass about ·01 millim.

wide, mainly composed of a large nucleus, which contains a nucleolus, itself about ·002 millim. broad.

These cells are not described by Allman (*loc. cit.*) or in Hyatt's papers (Proc. Essex Institute, vols. iv. & vi.), nor have I seen them noticed in any other paper which I have met with. Their form would seem to assign a mesodermic origin to them, but hitherto no overlying tissue has been found, to represent the ectoderm.

Floating Apparatus of the Statoblast.—The cellular structure of the annulus of the statoblast in those forms in which it is developed resembles that of the gemmule of true *Spongillidæ*, as elucidated by the researches of Carter, Marshall, and Vejdowsky, so strongly that it only requires to be pointed out in order to be recognized.

Australasian Species of Freshwater Polyzoa.

The only Australasian species of Freshwater Polyzoa recorded by Jullien (*l. c.*), and by Hutton, in his 'Catalogue of the Marine Mollusca of New Zealand,' is *Plumatella Aplini* of Macgillivray. A form assigned to *Plumatella repens*, var. *a* of Allman, is, however, described by A. Hamilton from near Napier in New Zealand (Trans. New Zeal. Inst. xii. p. 302); and Mr. Whitelegge is stated to have exhibited the same species, *Plumatella repens*, and *Fredericella sultana*, from New South Wales, in Proc. Linn. Soc. N. S. Wales, viii. (1883) pp. 297, 416. The genus *Lophopus* does not appear to have been hitherto recorded from Australasia.

DESCRIPTION OF PLATE II.

Fig. 1. *Lophopus Lendenfeldi*, n. sp. Part of the colony, attached to plant-stem, showing a subspiral arrangement of the zoarium. Natural size.

2. Part of the zoarium, showing zooids in different states of contraction or expansion. *a*. Hyaline (? cuticular) layer observed at termination of body of polypides. *b*. Food-mass in alimentary canal. ×40 diam.

3. Portion of the ectocyst, to show structure as exhibited by staining with borax carmine. *a*. Stellate cells; *b*. Globose cells. ×600 diam.

4. A statoblast, showing: *a*, annulus; *b*, body; *c*, blastodermic cells*? ×60 diam.

N.B. These figures are somewhat schematized, except as regards essential details.

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* These bodies appear to consist mainly of refractive granules and of a large nucleus. Perhaps they represent an early stage in the division of the germ-cell.

Fig. 3

Fig. 1.

Fig. 4.

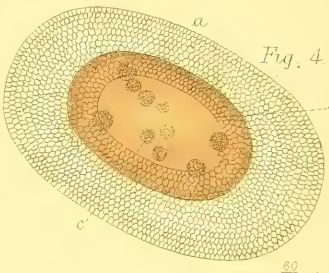

Fig 2